

is on the climate of the Chester district considered in its relation to fruit-growing. Dr. Stolberforth describes the special forms of microscopic life found by surface dredging in the estuary of the Dee. Mr. Ruddy gives a list of the Caradoc or Bala fossils found in the neighbourhood of Bala, and Mr. Siddall writes on the American waterweed (*Anacharis Alsinistrum*, Bab.), its structure and habit, and adds some notes on its introduction into this country, the causes affecting its rapid spread at first, and present apparent diminution. Mr. Shrubsole has three short papers—one a list of the land and freshwater shells of the Chester district, a second on the *Glauconome disticha* from the Bala beds at Glyn Ceiriog, and the third on the occurrence of *Calcisphara* (Williamson) in the Eglwyseg rocks near Llangollen. It will be noticed that these fifteen papers, with two exceptions, refer solely to the district in which the Society works, and that they refer to its geology (including palæontology), meteorology, and several departments of its natural history. The Society is to be congratulated on the thoroughness and comprehensiveness of its work for the past year.

ACCORDING to the *Colonies and India* the Winnipeg Historical Society has suggested to the Canadian Government that a scientific investigation be made into the remarkable ancient mounds recently found in the Canadian North-West, and the suggestion has been warmly commended in the Canadian press. It is pointed out that these mounds are rapidly disappearing under the ploughshares of the farmer, and with them will go the best means of settling the problem whether the mound-builders crossed from Asia and passed down the river valley to the central portions of the continent, or whether their migrations were from south to north.

THE recent attempts to cultivate the tea-plant in the neighbourhood of Messina have been very successful. Similar experiments had been made some years ago without giving any satisfactory results.

AN International Exhibition, similar to that held at Antwerp last year, is planned by the city of Geneva for 1887.

THE Provincial Diet at Salzburg has issued a law interdicting the sale of Edelweiss-plants with roots. The Tyrol Diet has also asked for Government regulation of the trade in these plants.

MR. JAMES GRIEG, of the Museum of Bergen, informs *Naturen* that in the course of last summer a male specimen of *Palinurus vulgaris* was taken in a lobster pot at Manger. This, as far as is known, is the first time that this crustacean has appeared as far north as the Norwegian coasts.

THE following new books and new editions have been received by us since January 1:—"A Tangled Tale," by L. Carroll (Macmillan and Co.); "East Anglian Earthquake of 1884," by R. Meldola and W. White (Macmillan and Co.); "Osteology of the Mammalia," 3rd edition, by W. H. Flower (Macmillan and Co.); "A Brief Text-Book of Political Economy," by F. A. Walker (Macmillan and Co.); "A Treatise on Colours and Pigments," 2nd edition, by J. S. Taylor (Winsor and Newton); "Catalogue of the Coventry Free Library"; "Practical Bacteriology," by E. M. Crookshank (Lewis); "Key to Todhunter's Mensuration for Beginners," by the Rev. Fr. L. McCarthy (Macmillan and Co.); "Catalogue of Fossil Mammalia," British Museum, part 2, by R. Lydekker; "Geology," vol. i., by Prof. Prestwich (Clarendon Press); "Annuaire de l'Académie Royale de Belgique" (Hayez, Bruxelles); "The Rotifera; or, Wheel Animalcules," by Hudson and Gosse (Longmans); "Light," 4th edition, by Prof. Tyndall (Longmans); "Year-Book of Pharmacy, 1885" (Churchill).

THE additions to the Zoological Society's Gardens during the past week include a Bonnet Monkey (*Macacus sinicus* ♂) from

India, presented by Messrs. Phillips Bros.; a Vervet Monkey (*Cercopithecus lalandii* ♂) from South Africa, presented by Mrs. Sinclair; a Ring-tailed Coati (*Nasua rufa* ♂) from South America, presented by Mr. C. E. Dashwood; a Northern Mocking Bird (*Mimus polyglottus*) from North America, presented by Mr. F. Green; a Jackal Buzzard (*Buteo jacob*) from South Africa, presented by the Rev. C. W. H. Reynolds; a Jay (*Garrulus glandarius*), British, presented by Mr. E. R. Collins; three Hoary Snakes (*Coronella cana*) from Constantia, South Africa, presented by the Rev. G. H. R. Fisk, C.M.Z.S.; a White-throated Capuchin (*Cebus hypoleucus* ♀) from Central America, deposited; four Cirl Buntings (*Emberiza cirius*), two Pied Wagtails (*Motacilla lugubris*), British, purchased; a Vulpine Phalanger (*Phalangista vulpina*), born in the Gardens.

OUR ASTRONOMICAL COLUMN

COMET BROOKS.—Dr. H. Oppenheim has computed the following elements and ephemeris for Comet Brooks:—

$$T = 1885 \text{ Nov. } 24^{\text{h}} 7806 \text{ Berlin M.T.}$$

$$\begin{aligned} \pi &= 296^{\circ} 38' 45'' \\ \Omega &= 262^{\circ} 1' 48'' \\ i &= 42^{\circ} 25' 11'' \\ \log q &= 0.03012 \end{aligned} \quad \text{Mean Eq. } 1886.0.$$

Error of the middle place (o - C).

$$d\lambda = -4 \quad d\beta = -2$$

Ephemeris for Berlin Midnight

	1886	App. R.A. h. m. s.	App. Decl.	Brightness
Jan. 22	...	21 35 11 ... +15°	21° 0' ...	0.3115 ... 0.59
24	...	21 42 32 ... +16°	7° 0' ...	
26	...	21 49 50 ... +16°	51° 9' ...	0.3203 ... 0.54
28	...	21 57 4 ... +17°	35° 7' ...	
30	...	22 4 14 ... +18°	18° 5' ...	0.3295 ... 0.49

The brightness on December 28 is taken as unity.

This comet was independently discovered by Mr. E. E. Barnard, of Vanderbilt University, Nashville, Tennessee, on December 27, the night after its discovery by Mr. Brooks.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1886 JANUARY 24-30

(For the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on January 24

Sun rises, 7h. 52m.; souths, 12h. 12m. 22° 55'; sets, 16h. 33m.; decl. on meridian, 19° 9' S.; Sidereal Time at Sunset, oh. 49m.

Moon (at Last Quarter on Jan. 27) rises, 21h. 13m.*; souths, 3h. 39m.; sets, 9h. 53m.; decl. on meridian, 1° 53' N.

Planet	Rises h. m.	Souths h. m.	Sets h. m.	Decl. on meridian
Mercury ...	6 55 ...	10 50 ...	14 45 ...	23° 10' S.
Venus ...	8 39 ...	14 17 ...	19 55 ...	5° 5' S.
Mars ...	21 6* ...	3 35 ...	10 4 ...	5° 9' N.
Jupiter ...	22 12* ...	4 11 ...	10 10 ...	1° 4' S.
Saturn ...	13 45 ...	21 55 ...	6 5* ...	22° 38' N.

* Indicates that the rising is that of the preceding evening and the setting that of the following morning.

Occultation of Star by the Moon

Jan.	Star	Mag.	Disap.	Reap.	Corresponding angles from vertex to right for inverted image
24 ...	B.A.C. 4043	...	6½ ...	3 40 ...	4 40 ... 100° 222°
Jan. ...	h.				
24 ...	18	...	Jupiter in conjunction with and 0° 17' south of the Moon.		
26 ...	16	...	Venus stationary.		
26 ...	21	...	Mars stationary.		
30 ...	6	...	Mercury at greatest distance from the Sun.		

Star	Variable-Stars		Decl.				h.	m.
	R.A.							
U Cephei ...	0 52.2	81 16 N.	Jan. 27,	23	21	m		
λ Tauri ...	3 54.4	12 10 N.	"	26,	4	21	m	
δ Libræ ...	14 54.9	8 4 S.	"	29,	3	14	m	
U Coronæ ...	15 13.6	32 4 N.	"	29,	0	46	m	
U Ophiuchi ...	17 10.8	1 20 N.	"	26,	20	49	m	
				24,	11	42	m	
								and at intervals of 20 8
δ Cephei ...	22 24.9	57 50 N.	Jan. 28,	5	0	m		
			"	29,	19	0	M	

M signifies maximum; *m* minimum.

Meteor Showers

One of the minor periodical showers with radiant at R.A. 135°, Decl. 40° N., shows a maximum during the present week. Occasionally large meteors are observed from this radiant. Meteors from a radiant about R.A. 180°, Decl. 35° N., should also be looked for.

GEOGRAPHICAL NOTES

M. DE WOGAN, who has been searching in a small canoe for the true source of the Danube, communicates the result in a recent *Bulletin* of the Paris Geographical Society (Nos. 19 and 20). The story that it takes its rise in the gardens of the Prince of Fürstenburg at Donaueschingen, where a monument recording the fact is erected, is, he says, a fable. The Danube, he has found, is formed by the union of two small streams, the Brig, or Brigach, which takes its rise at Saint-Georges, to the north of the Mountain Tryberg, at about a mile from the source of the Neckar, and the Breg, or Bregach, which rises at St. Martin, to the west of Tryberg, and twenty miles from Donaueschingen, where both streams unite. M. Wogan, who has explored these streams and their tributaries, criticises and corrects the statements of MM. Réclus and Saint-Martin in their geographical works on this subject. M. Charles Rabot, in the same *Bulletin* describes a journey made during the last autumn in the peninsula of Kola, in Russian Lapland, a region which is largely a blank on our maps. In August M. Rabot traversed the peninsula twice, from north to south, from the Arctic Ocean to the White Sea. He describes it as excessively monotonous, covered by forests, with many large lakes, or rather marshes. On the eastern shore of Lake Imandra there is a range of mountains, called Umbdek, which reaches an altitude of a thousand metres, and which is the highest elevation in European Russia, except the Caucasus. These are a picture of savage desolation. He has come to the conclusion that the western part of Russian Lapland is far from being flat, as generally represented on the maps. Between the White Sea and the ocean there are three ranges of mountains separated by large depressions covered with forests, marshes, and lakes. M. Rabot concludes with some observations on the inhabitants—Russian Lapps and Samoyedes.

MR. CYRIL HAVILAND, of Sydney, in a letter in the *Times*, points out how little is really known in a scientific sense, of the islands of the Southern Pacific and of parts of the Australian coasts. Eleven of Her Majesty's vessels are at present in Sydney; they cruise frequently in these seas, but, says Mr. Haviland, no one is any the wiser. He thinks that these ships, and others of the Royal Navy suited for the purpose, should, as far as possible, be utilised by placing on board one or more specialists in the various fields of science, with the appliances necessary to enable them to prosecute their researches. He says that had only one professed naturalist been borne on the books of the *Nelson* or the *Diomed* during their stay on the Australian station, much light might have been thrown on many problems, for the seas and islands abound with undiscovered species. The suggestion is certainly a good one, for there must be many occasions when good scientific work could be done in the vessels of our Navy without in the smallest degree interfering with the object of the cruise or the discipline of the ship. How much may be done in that way by an officer of scientific attainments even in the midst of his professional work, is shown by the instance of Dr. Guppy, whose numerous communications in our own columns and elsewhere have made his name well known in the world of science.

AMONGST the articles in the current number of the *Proceedings* of the Royal Geographical Society is one by Mr. Ravenstein on

bathy-hypsographical maps, with special reference to a combination of the Ordnance and Admiralty Maps. The leading features of maps such as Mr. Ravenstein suggests are that all heights and depths would be referred to one and the same datum-level; the features of the ground would be shown by means of horizontal contours, which would enable the compiler to limit himself to the introduction of a comparatively small number of carefully-selected figures; the intervals between the contours would be tinted to bring out the relief of the ground; the line along which land and water meet at ordinary spring tides would be marked; the foreshore and all sand-banks which uncover would be clearly indicated as on ordinary Admiralty Charts; roads, railways, and other features calculated to obscure the physical features of the ground would be omitted. A physical outline map of this character could be utilised for illustrating the hydrographical, geological, and other features of the country. Another important paper is Mr. Delmar Morgan's translation of the notes of M. Kossiakof, the military topographer who accompanied Dr. Regel on his journey in 1882 in Karateghin and Darwaz, on the borders of Chinese Turkestan and Afghanistan.

A LONG letter has just been received from Mr. H. O. Forbes, who, it will be remembered, left England in the beginning of last year, for the exploration of the interior of New Guinea. Mr. Forbes arrived at Port Moresby on August 28 last, and on September 2 started for Sogeré, in the interior, to prospect. He had a pleasant trip, saw the lie of the land, and the people—taking to them and they to him—and returned to Port Moresby to pick up his men and his baggage to start for the Owen Stanley Range in true earnest. On October 1 Sogeré was reached again. Within a week houses were erected for Mr. Forbes, his white companions, his men, and his stores; and soon after everything had been brought from Port Moresby and housed. Returning to the Astrolabe Range with Mr. Hennessy, Mr. Forbes completed his survey. On his return to Sogeré he found everything in shape, and began work at once with the help of his companions, collecting in the fine forest near the village, taking observations, and laying plans for the future. Mr. Forbes had made up his mind that it would be impossible to accomplish the ascent of the Owen Stanley Range this season, one of the results of the delay caused by the loss of his baggage. In the end of April, when the wet season is passing over, the attempt will be made. He had sent his Malay servant, Lopez, to camp out in search of a rare bird of paradise; and it speaks well, he says, for the quiet of the country that he can go off alone to a distant village where his language is unknown. On his way to the coast for supplies Mr. Forbes met Sir Peter Scratchley, who went on to Sogeré with Mr. Forbes, and expressed himself charmed with the house and the work already done, as well as with the good relations established with the natives. Mr. Forbes went back with Sir Peter Scratchley in order to accompany the latter to the north coast and Huon Gulf. Without additional funds it is very doubtful if he will be able to accomplish all he has planned.

THE current number of Dr. Umlauf's *Rundschau* contains an article on the geographical knowledge of the Alps in early times, the present instalment dealing with the Roman period. Other articles describe the Samoans and their customs; a cruise in the Straits of Magellan; while Herr Gavazzi discusses the orography of "the Croatian Mesopotamia," as he calls the district lying between the Drave and the Save. There are also some interesting statistics relating to the populations of German towns, schools in Finland, &c., but the most generally interesting of these are the statistics relative to the journeys of the various travellers who have crossed Africa from time to time. Dr. Livingstone crossed from St. Paul de Loanda to Quilimane, a distance of about 4000 kilometres, in twenty months; Commander Cameron from Bagamoyo to Catombela, 6000 kilometres, in thirty-two months; Mr. Stanley from Bagamoyo to Boma, 11,500 kilometres, in thirty-three months; Major Serpa Pinto from Benguela to Durban, 3700 kilometres, in sixteen months; Lieut. Weissmann from St. Paul de Loanda to Sadani, 4000 kilometres, in twenty-two months; Mr. Arnot from Durban to Benguela, 3500 kilometres, in thirty-nine months; Messrs. Capello and Ivens from Mossamedes to Quilimane, 4500 kilometres, in fourteen months. If these figures be accurate, it would appear that Mr. Stanley travelled more rapidly than any of the others, although he is closely pushed by MM. Capello and Ivens, for while his monthly average was about 349 kilometres, theirs was 321; but then his journey was about two and a half times longer than theirs in distance.